

## CLAIMS:

1. A receiver, in a digital transmission system, comprising a channel decoder for protecting a transmitted signal against channel transmission errors, the channel decoder comprising:

- a set of co-processors including at least 3 clusters of programmable co-processors for executing the functions of a digital front-end block (DFE), a channel correction block (CHN) and a forward error correction block (FEC), respectively,
- a general purpose processor (DSP) for managing control, synchronization and configuration of the channel decoder, and
- a memory (SM) shared between the clusters and the general purpose processor.

2. A receiver as claimed in claim 1, wherein the set of co-processors comprises:

- a digital front-end processor (DFE) for computing:
  - base-band demodulation of the received signal,
  - a programmable Nyquist filter,and for controlling an automatic gain control loop (AGC) and synchronization loops for time and carrier recovery,
- a fast Fourier transform processor (FFT) for performing demodulation in the case of multi-carrier systems and frequency domain equalization in the case of mono-carrier systems,
- an adaptive filter array processor (AFA) for time domain equalization, interference rejection and frequency interpolation in the case of COFDM modulation,
- a forward error correction processor (FEC) for decoding Reed-Solomon and convolutional codes which were used during transmission.

3. A broadcasting system comprising a receiver and a transmitter, in a digital video transmission system, wherein the receiver is according to any one of claim 1 or 2.

4. In a digital video receiver, a method of channel decoding for protecting a transmitted signal against transmission errors, the method comprising the steps of base-band demodulation, channel correction and forward error correction of the received signal, each step being performed by a cluster of programmable co-processors, a general purpose  
5 processor with a shared memory being provided for managing control, synchronization and configuration of said clusters of co-processors.

5. A computer program product for a receiver computing a set of instructions which, when loaded into the receiver, causes the receiver to carry out the method as claimed  
10 in claim 4.

6. A signal for carrying a computer program, the computer program being arranged to carry out the following steps : base-band demodulation, channel correction and forward error correction of a received digital video signal, each step being performed by a  
15 cluster of programmable co-processors, a general purpose processor with a shared memory being provided for managing control, synchronization and configuration of said clusters of co-processors.